

Introduction For Reviewers

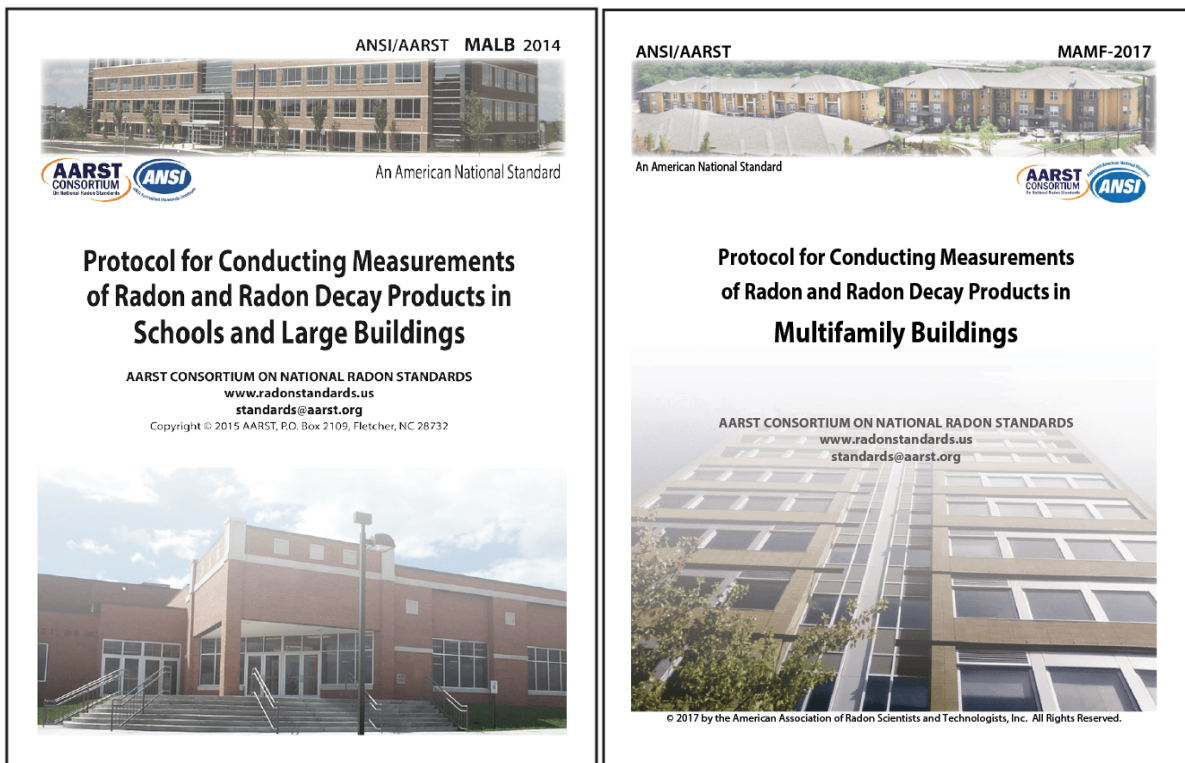
Proposed revisions to MALB and MAMF

Proposed revisions herein apply to harmonization work published for public review from September 25th to November 9th, 2020 for:

- AARST MAMF-2017, *Protocol for Conducting Measurements of Radon and Radon Decay Products in Multifamily Buildings*, and
- AARST MALB-2024, *Protocol for Conducting Measurements of Radon and Radon Decay Products In Schools and Large Buildings*

Work on harmonization of text between these two standards resulted in significant improvements and similar scope, due to so many mix-use buildings.

The holistic review of both standards resulted in many technical improvements and conversion to sentence styles that aid assessments for compliance with the standard. The previously publicly reviewed portion of work that these revisions apply to can be accessed at: <https://standards.aarst.org/public-review>



5.0 TESTING PROCEDURES AND OPTIONS

5.1 Test Deployment Periods

5.2 Evaluation of Occupied Versus Unoccupied Concentrations

5.3 The Time-Sensitive Testing Option

Rationale for change in Section 5.4.

This amendment addresses concerns raised both for repeating long-term follow-up testing for excessive durations while leaving occupants at risk and concerns relate to questionable validity of comparing tests conducted more than one year apart.

5.4 The Extended Testing Option

Note—This protocol builds upon those developed by EPA, relative to EPA's "A Citizen's Guide to Radon."

Table 5.4 Extended Testing Option—Required Procedure and Summary	
Step 1	<p>Initial Test Testing at each location is conducted using a single <i>short-term device</i>.</p> <hr/> <p>Evaluations of occupied versus unoccupied <i>radon</i> concentrations are additionally recommended for non-residential locations.</p>
Step 2	<p>Follow-up Test Options Retest locations that meet or exceed the <i>action level</i>, e.g., 4 pCi/L. <i>Follow-up</i> testing requirements allow the following options: ^{1,2}</p> <hr/> <p>a) A second test with a <i>short-term device</i> is conducted. Where a first test is twice the <i>action level</i> or greater, this confirmation test should be conducted without delay; or</p> <hr/> <p>b) Where a first test is less than twice the <i>action level</i>, testing can be conducted with a <i>long-term test device</i> for an extended period if the situation allows a closer evaluation of annual average to <i>radon</i> concentrations; or</p> <hr/> <p>c) Evaluation of occupied versus unoccupied <i>radon</i> concentrations for non-residential locations.</p>
Step 3	<p>Decisions to Fix the Building</p> <hr/> <p><i>Mitigation</i> decisions are to be based on the average of the two test results from <i>short-term devices</i> or the results from <i>long-term testing</i> ^{3,4}</p> <p>Fix the building if test results meet or exceed the <i>action level</i>, e.g., 4 pCi/L.</p> <p>Consider fixing the building if results are greater than half the <i>action level</i>, e.g., between 2 and 4 pCi/L.</p>

¹ Where follow-up testing is not completed within 12 months after completing Step 1, the testing procedure shall be restarted with Step 1, in accordance with either Section 5.3 or this Section 5.4.

² Note—While decisions to *mitigate* at any time are not prohibited, the second test aids confidence that decisions are not being made based on a faulty test device or unexpected conditions.

³ Note—Section 7.2 provides requirements for when the test result from two *short-term test devices* disagree in terms of making a *mitigation* decision.

⁴ Where evaluations of occupied versus unoccupied concentrations have been conducted in accordance with Section 5.2, report recommendations shall account for *radon* exposures indicated by the evaluation.

Rationale for changes in Section 5.6 and 5.7 (as editorially numbered below).

5.6—It was not intended to inadvertently cause two complete rounds of testing (two seasons) for newly constructed buildings. 5.7—Observance that a different set of less complicated post-mitigation test procedures in Section 7 removes confusion for people who might interpret, by virtue of section title, that all test procedures were covered in Section 5.

5.5 Testing A Single Room or Dwelling

Note—Sections 6.1.3 adds additional required conditions when testing only individual rooms or dwellings.

5.6 New Construction

For buildings constructed with *radon*-resistant features, initial testing shall be conducted normally, such as required in accordance with either Section 5.3 *Time-Sensitive Testing Option* or Section 5.4 *Extended Testing Option*.

~~However, *radon*-resistant features that do not include a fan shall be regarded as *mitigation* efforts that require seasonal verification of effectiveness, in accordance with *clearance testing* requirements in Section 7.3.2 b.~~

5.7 Post-Mitigation Testing Protocols

Testing after mitigation efforts shall be conducted in accordance with Section 7.3 where effectiveness is judged based on one test event with one or more test devices at each location to be tested.

Rationale for changes in Section 7.3.

Obscured clarity: Post-mitigation seasonal verifications were intended to be initial steps taken for operation, maintenance and monitoring (OM&M) procedures rather than a reason to interrupt lending approvals. Post-mitigation seasonal testing is only one part of a complete OM&M plan. In absence of other OM&M plan requirements, this section was determined to be removed and applied to a different standard that fully addresses OM&M.

7.3 Post-Mitigation Testing Protocol

7.3.1 General procedures—Post-mitigation testing

7.3.2 Clearance Testing

Clearance testing to verify all portions of a building are below the *action level* shall comply with all requirements in a) ~~, b) and c~~ and b) of this Section 7.3.2.

b) ~~Seasonal verification~~

~~One portion OM&M is—to reduce *radon* concentrations shall not be reported as complete until retests provide evidence of effectiveness that accounts for seasonal influences. Prior to, or within the first year of occupancy or ownership of property management, OM&M requires the following verifications of seasonal effectiveness:~~

- ~~1.—A *post-mitigation clearance test* conducted under conditions that are representative of the predominant *normal-occupied building operating condition* for the test location, in accordance with requirements in Section 2.7.2, shall have occurred or be conducted;~~
- ~~2.—Where *mitigation* methods are based on passive efforts or mechanical dilution or pressurization of indoor air, two *post-mitigation clearance tests* are required to include:~~
 - ~~a.—One *clearance* conducted under conditions that are representative of the predominant *normal-occupied building operating condition*, such as heating season conditions, and~~

- ~~b. Another clearance test conducted under cooling season conditions, or the alternate seasonal condition of longest annual duration; and~~
- ~~3. Where decisions to mitigate relied on an evaluation of occupied versus unoccupied concentrations, as is recommended in Section 5.2, post-mitigation clearance testing shall include such an evaluation that meets requirements in Normative Appendix B.~~

Rationale for changes in Section 8.

Even though specific requirements for post-mitigation seasonal verification were determined to be removed, the related report guidance is still needed. As such, minor adjustments to sentences were needed to accommodate the proposed removal of seasonal verification requirements in Section 7.3.2.

8.0 TEST REPORTS

8.1 Conventions

8.2 Summary Reports

8.2.6 Elevated Radon Concentrations

Guidance in *summary reports* and otherwise provided where test results meet or exceed the *action level* shall comply with all applicable requirements in a), b), c), d) and f) of this Section 8.2.6.

c) Seasonal Verification

~~Recommendations shall convey that efforts to reduce radon concentrations are not complete until retests provide evidence of effectiveness that accounts for seasonal influences.~~

It shall be recommended to conduct additional *clearance testing* within the first year after occupancy, or ownership of property management:

1. Where *post-mitigation clearance testing* has not been conducted under the predominant *normal occupied building operating conditions*, for the building or *unique sector*, ~~in accordance with Section 7.3.2~~, and
2. Where *mitigation* methods are based on passive methods or mechanical dilution or pressurization of indoor air and *clearance testing* has not been conducted during two different seasons. ~~, in accordance with Section 7.3.2.~~